

SIX DOLLARS
PER QUARTER

1. What is the purpose of the study?
 The purpose of the study is to determine the effect of the use of a mobile learning application on the learning outcomes of students in the field of mathematics.

Korea is too poor to be of any value to China and to feel the burden of her shoulders ought to be a great relief to China. She will strengthen her control over the country by binding it in friendly intercourse and control. England by supporting neutrality will also make a staunch friend of Korea, and Korea, who feels she cannot exist by herself and must lean on some great Power, will gladly receive herself in the arms of English and Chinese guarantee. Failing this she will listen to Russia, Japan, and America, and hereafter, and openly defy England and China. Then will come the crash, for which Russia is preparing with such intense activity, notwithstanding the avowed intention of China to put off constructing her frontier railways, and to go comfortably along with troops armed with all kinds of rifles and heavy ordnance—all same before!

My unfeeling for it, is true, but sincere advice to the Chinese is to—

1st.—Avoid war with Russia by removing the home of contention in Korea and giving the country conditional independence.

2nd.—Prepare vigorously for war, by arming the troops throughout the Empire with the latest magazine rifle, and drilling them on a uniform system.

3rd.—Hurry up the frontier railways with all possible speed, and don't let Russia drag the country into war until you are ready.

4th.—Borrow all the money you may need for the enterprise; for it is not better to be ready on borrowed money than not to be ready at all, and be destroyed in consequence? Remember that those who lend to the integrity of your Empire, the maintenance of the country, and you will soon realize the painful truth of all I have written.

Korea is at present groaning under the vacillating policy of her great suzerain and neighbour. No business concern can flourish without a fixed purpose and strong administration, neither can any nation. Let China, then, act vigorously and promptly in assisting the Koreans to develop their own administration, abolishing foreign jobbing advisers, and putting the country on a firm footing of neutrality with the co-operation of England, China and England will by this course take the wind completely out of the sails of all the intrigues which are now going on at Seoul, and, *ipso facto*, become paramount in cases of importance in the country. China should have her own representative at the capital, just as England has in Afghanistan, but no others. Too many cooks spoil the broth, and at present there are far too many political cooks and cooks' apprentices in Seoul. Why do I hint at the doom of the Manchurian dynasty? Because the Manchus are not Chinese, and if they suffer defeat, the Chinese, knowing how well to whom they owe their dynasty, will rise to defend their own country proper, leaving the Manchus and Manchuria to fall into the hands of Russia, and propitiate her if need be. I have heard intelligent Chinese state these sentiments boldly, and during the previous Russian scares, 1880 and 1885, the same views were freely expressed, and formed the subject of a thrilling leader in the *Shanghai Courier* in the spring of 1880.

CHESEBURY DUNCAN,

(Late of Royal Korean Customs Service.)

* *Life "Korea and the Power"* page 71, line 15.

MR. OSBERT CHADWICK ON THE HIGH-LEVEL SEWERAGE.

The following report of Mr. Chadwick on the sewerage of the high-level district of the city of Victoria, addressed to the Colonial Secretary, was laid on the table at the Legislative Council meeting on the 30th ult.

In continuation of the reports which I have already submitted to you, with regard to the recommendations made by the Commissioners to inquire into the cause of the fever, &c.; I have now the honour to lay before you, my recommendations as to the sewerage of that district.

1. In my previous reports I merely expressed concurrence with the statement, that the sewerage of the district required improvement. Having made an examination of the district in question, and of that adjacent to it, eastward, between the same altitudes, I find that many similar conditions obtain in both. The topographical features are such that the joint sewerage may be treated as one sewerage scheme, which will be absolutely separate and distinct from the sewerage of any other portion of the City of Victoria. I propose therefore to discuss, not merely the sewerage of the Western district; but that of what may be called the High-level district. The boundaries of the High-level district are, approximately, as follows:—To the northward or below Caine Road, as far as Ladder Street, thence westward by Bonham Road to its junction with Pokfulam Road; and on by Hill Road and Queen's Road to Belcher's Point. To the southward or above the present boundary, is the Pokfulam Aqueduct. To the east, the boundary is Shelley Street, though a few houses, east of this, may be connected to it. To the west, the boundary is at present undetermined, but may be taken as a line drawn in a southerly direction from Belcher's Point. The High-level district, therefore, comprises the greater portion of the area reserved for European dwellings. Its sewerage-system may be so arranged as to be wholly distinct from that of the City below. Indeed it will scarcely be an exaggeration to say that no Chinese tenement will pour its sewage into this system.

2. The sewerage-system (if it merits the name), which has hitherto obtained in this and other districts, has been to drain tenements to the nearest natural storm-water channel, or nullah. When the open channel has become offensive, owing to the sewage poured into it, the nuisance has been abated, or rather hidden, by covering it over. In this manner a number of large covered storm-water channels, have come into existence, which follow the courses of natural water-courses, and which convey both rain-water and sewage to the harbour.

3. From the point where these combined channels cross Queen's Road, to their mouths at the Praya, they have but little fall, and they are filled up with sea water on the rise of each tide. Excepting, therefore, during heavy rain, the current through them is checked in the lower and flatter parts, and a deposit of earth, stones and sand, mingled with sewage, takes place giving off offensive emanations; which may, and often do, rise to the upper regions above.

4. In my original report, I proposed to remedy this by diverting the sewage-proper and dry-weather flow from the combined sewer and storm-water channel, at the point where it enters the flat region, and conducting it by a separate pipe of small diameter to the sea. I further recommended certain improvements to the storm-water channels, in their steeper parts, so as to render them more suitable for the conveyance of sewage. These recommendations, however, have not been carried out, nor, with the exception of a few lengths of pipe sewer, constructed since the arrival of Mr. Cooper, the sanitary engineer. As far as sewerage is concerned, matters are now very much in the same condition as they were in 1882. I now propose to effect the interception at an earlier period. All recent experience shows that a channel, suitable for the conveyance of a tropical rain-fall, is not a suitable conduit

for sewers; it has not only here, but everywhere, been weighed in the balance and found wanting. 5. This decision has been arrived at principally by the consideration of recent experience, as to the ventilation of sewers. This question has received great attention of late years, and late additions have been made to the stock of knowledge on the subject. At the same time much misapprehension exists as to the causes which necessitate it, its objects and effects. Before proceeding to describe the proposed sewerage of the High-level district, I propose to discuss, as briefly as possible, the principles of sewer-ventilation; and to define what it is intended to effect, what it can effect, and what it cannot do. These principles affect, not merely the High-level scheme; but every sewerage scheme whatsoever. To these general data, a brief discussion will be added of the general principles which have to be attended to in the construction of sewers.

6. It is usual to speak of "sewer gas" as though it were some specific gaseous substance, such as oxygen or hydrogen, or ordinary coal gas; and to assume that sewage evolves this objectionable substance in large quantities. Now, as a matter of fact, sewage, even when containing the full amount of fecal matter, and purposely retained in a stagnant and putrefying condition, is found to evolve but little true gas. The gases which it does evolve are merely gas. These gases are produced by the decay of all vegetable matters, in the presence of water. They are not intrinsically poisonous or disease-producing. In a large un-ventilated sewer, containing deposits, an elongated cesspool in short, these gases may accumulate and make the air unfit to sustain life. A man entering such a sewer might lose his life by suffocation. He would not be poisoned, any more than a man who is drowned on falling into the water, is poisoned by it.

7. No such accumulation and stagnation can take place in any properly constructed sewer, and the sewer, even if received, already putrescent, from defective house-drains, passes through such sewers so quickly, that but little true gas can be evolved *in transitu*. Indeed the chemical composition of air taken from any ordinary sewer differs inappreciably from that of the air outside. In most cases the most refined analytical methods would probably fail to establish any difference whatsoever.

8. What does take place is that the sewage, especially putrid sewage, imparts a most disagreeable smell to the air which it comes in contact. In some cases also, it imparts to it, in some cases, a quantity of the most offensive matter, in sewage-tainted air, though painfully apparent to the nose, and even capable of producing immediate physiological effects, nausea, and so forth, is so minute as to elude the most delicate analytical methods. Just as a drop of attar-of-roses will scent a whole room, or to use a more suitable parallel the smell of cooking cabbage or onions will infect a whole house or neighbourhood. Yet the chemist would have to say the least, great difficulty in detecting the odiferous principle of roses, cabbage, or onions in the air of the room, house, or district. The nose is more sensitive than the balance of the analysis.

9. Nevertheless the fact remains that a small amount of sewage will impart a bad smell to a large quantity of air. The smell is stronger and more offensive when the sewage is putrescent, than when it is fresh; when concentrated than when amply diluted. It is, moreover, far from certain that the odiferous emanation from sewage is the thing that produces disease. Indeed it seems probable that it is not. The disease-producing agent is usually supposed to be a vegetable germ, having its origin or habitat in the sewage; but so far its existence in the air of sewers has not yet been demonstrated. It is only inferred from the fact that some organisms are found in the bodies of persons suffering from diseases, attributed to sewer-tainted air or water. Air smelling of sewage has been in contact therewith, and may, and frequently does, contain these subtle disease-producing particles, whatever they may be, for undoubtedly it often produces disease. Certain it is that sewage-tainted air cannot be breathed for a continuance, without danger to health.

10. Before proceeding to discuss the remedy for sewer smells, some facts may be mentioned as to the motion of air in sewers. It is popularly supposed that so-called "sewer gas" has a tendency to ascend, probably because it is assumed to be like some of the better known gases, lighter than air. Lofy ventilators are erected; and they are supposed to emit continuously, an invisible, but offensive and deadly cloud, like smoke from a chimney. But the air in sewers differs inappreciably from the air outside them, and its movements obey, not the general physical laws of motion. Like everything else in the universe, it obeys the force, and is then acted upon, it moves in the direction of the force.

11. If the air in an inclined or vertical pipe becomes warmer, and consequently lighter, than the air outside it, there is an unbalanced pressure at the lower office, and the air ascends and escapes at the top. If there be a source of heat within the tube, sufficient to heat and rarify each successive portion of air as it enters, a steady upward current will be the result. In an ordinary chimney, the fire supplies the heat, but even in this case, the upward current is not always as steady as could be wished. Chimneys sometimes, if the air in the tube is colder and denser than the air outside, then it will descend, and escape at the lower opening. If there were something in the tube, a lump of ice for example, that would cool the entering air, then a descending current would be the result. Owing to eddies, produced by buildings and the like, the wind may cause a greater pressure on one opening than on the other, and a movement, towards the opening where the pressure is greater, of the current of water through the tube may induce, by that where it is least. Lastly, the passage of a current of water through the tube may induce, by friction, a current of air in the same direction as that of the water.

12. The causes which produce movements of air in sewers are slight, and not easy to trace. But as a matter of fact, downward currents are as often, indeed more often, observed than upward. This was the result of a series of experiments made with self-registering apparatus by Mr. Santo Crimp, on the sewers of Wimbledon. These observations which extended continuously over a whole year, showed conclusively the preponderance of the downward current. My own observations here and elsewhere, though neither as exhaustive or conclusive as those of Mr. Crimp, tend to the same conclusion. One case, which happened in Malta, is instructive. A drain ventilating shaft some 50 feet high and very conspicuous, was supposed to pour forth "sewer gas" continuously, so as to infect the neighbourhood. The Committee appointed to enquire into the Cholera Epidemic of 1887, determined to see whether this ventilator (which did continuously pour forth sewage) with sewerage-system, was opened and some downy matter was inserted into the lower part of the ventilating pipe. A strong downward current was observed, so much so that the smoke drove the men out of the sewer. More fuel was added till a roaring fire was established, and the man-hole cover was then put on. The

fire was maintained for two hours, but not until the expiration of that time did its heat disturb the condition of things in the sewers sufficiently to establish an upward draft, and cause smoke to appear at the summit of the ventilator. This experiment does not show that there never was a strong and persistent downward current; and it demonstrates the difficulty, amounting almost to an impossibility, of producing an artificial current through a system of sewers in any desired direction. On this point, another experiment of Mr. Santo Crimp may be cited. He closed every known opening to the Wimbledon sewer, except those at the top and the bottom. To the upper opening, he attached a ventilating fan, which exhausted the air from the sewer sufficiently rapidly to remove its whole contents every five minutes. Nevertheless, whilst the fan was at work, his apparatus, the lower opening, continued to register a steady downward flow, just as it did before the fan commenced to work. The whole of the air removed by the fan, as well as that which flowed out below, must have entered by some un-trapped house-drain or other undiscovered opening. Indeed it may safely be asserted that the ventilation of a system of sewers, in the sense of producing a steady flow of air through it to some one point, has never been effected. Nor, indeed, with the materials and appliances at command, does it seem likely to be effected. If a fan or furnace were erected, for withdrawing the air from a large system, it would, on one point, and producing a draft at another, it would have to provide a sufficient number of openings, which, if the air, contained in the sewer, tends to escape; will allow it to do so, in the open air, where it is relatively harmless, rather than by house-drains into the interior of dwellings, where it is deadly.

13. The above stated facts and principles lead to the following conclusions as to the best way of abating the nuisance, caused by escapes of sewer-tainted air from openings. It has been shown that a small amount of sewage will taint a large volume of air. Clearly therefore, the less the quantity of air, exposed to the tainting action of sewage, the better; thus leading to the conclusion that the size of sewers should be reduced to the minimum size practicable.

14. Now a sewer, which has also to act as a storm-water channel, must have a section, many times larger than that for conveyance of sewage only, and it will contain a large volume of air, tainted with sewage, than a sewer, properly constructed, for sewage only. When, from any cause, an escape takes place, the large combined sewer will give forth a larger volume of tainted air, and produce a greater and more extended nuisance, than of the smaller volume escaping from the small sewer. The stream of sewage in the large sewer, exposed to a greater area capable of imparting taint to the contained air. Its damp sides, above the normal level of dry-weather-flow, are coated with low forms of fungoid growth, moulds, and the like, which doubtless contribute to the contamination of the air; and to the establishment of putrefactive action. The large sewer, therefore, is a large store-room of sewer-tainted air. The motion of this air is produced by causes, uncertain and beyond our control; and it will, from time to time, pour forth in large quantities, whenever and wherever the forces acting on the contained air cause it to issue forth. It is clear, therefore, that the section of sewer, which should be reduced to the minimum, and they should not be so designed as to convey large amounts of rain-water as well as sewage.

15. The manner of determining the minimum size, will be discussed later on, as well as the conditions under which rain-water may be admitted, and to what extent. The true remedy, however, for stenches from sewer-vents, is to make the sewage, passing through the public sewers, as little offensive as possible. To this end, it should be discharged into the sewers, fresh, before putrefaction has commenced, and the sewerage system, in connection with sewers, should be freely dilated with water. In other words, the ready way for the principal inconvenience, consists mainly in good house-drains, properly made and properly used; in an ample water-supply, not lavished or wasted, but well-applied. An abundant water-supply is, even now, possessed by many, and in a short time, will be within the reach of all the inhabitants of Victoria (provided always that its distribution is well administered). The Government may assist the householder in obtaining good house-drains. But the people themselves have the prevention. Of nuisances, mainly in the house-drains, the public will look after themselves. Unless the sewerage, generally, co-operates with the Government in sanitation, by looking after the interior arrangements of their dwellings, by insisting on the drains being well constructed and decently maintained all expenditure on sewers will be, if not useless, very much reduced in value, as regards the task of the Government in maintaining the sewers becomes a simple one, certain of success.

16. The area, the sewerage of which is about to be discussed, is almost entirely inhabited by European, and principally by the wealthier classes of that community. It is scarcely to be anticipated that such a population will neglect to take the simple precautions, necessary for the proper management of their house-drains. Their habits are such as lead to an abundant consumption of water. Any reasonably well constructed system of sewers is certain to be successful. If any failure does take place it will be the fault of the inhabitants of the district, and not of the Government, or of the designer of the system of sewers.

17. In determining the size of sewers, the following principles should be kept in view. The normal dry-weather-flow should fill the sewer to about one-third of its diameter. That is to say the sewage, proper, with any sub-soil water that may be admitted, should, during the hours of maximum flow, fill the sewer to one-third of its diameter. The gradient of the sewer should be such, that with this amount of water passing through it, the velocity should be not less than 2 feet per second, and preferably more. This velocity is the least that will prevent deposit, and will scarcely serve to remove it, when once formed. During some part of each day considerably greater than a feet per second should obtain.

18. To prevent casual obstruction, it is found that certain minimum sizes of sewers should be used irrespective of the duty that they have to perform; say 9" for principal sewers, and 6" for branches. To provide for new buildings also, sewers must be made somewhat larger than the size which would be in accordance with the flow of sewage from existing tenements. The size of pipes, is it possible to just the sizes, with any minute accuracy. The graduation of sizes in the market does not permit one to do so.

19. For these reasons, it will be advisable to provide means of flushing the sewer, by discharging, suddenly, from time to time, a considerable volume of water, so as to cause a rapid current through it. This may be done, either by collecting the sewage from higher levels in a tank; or by water derived from some other source such as the water-works or perennial springs. In the present instance, numerous natural springs will afford an ample supply for flushing. It is preferable, whenever practicable, that the sewer should keep itself clear of deposit, without flushing. The suddenly discharged flush displaces an equal volume of air, which must escape somewhere, and so produce smells from the vents, which will be aggravated by the fact that deposit has taken place, temporarily, which is stirred up by the flush.

20. It is not possible, wholly to exclude rain-water from house-drains and from sewers. To do so, absolutely, would complicate house-drainage. If backwaters were provided with two sets of drains, there would be no means of preventing sewage from being poured down the storm-water channel. Again, the rain-water, which flows off court-yards, stable-yards, and the like, is practically, as foul as sewage, particularly at the commencement of a shower. It will, however, be seen that the sewer, even when reduced to the minimum practicable size, in accordance with the principles laid down above, will yet have a margin of carrying-capacity sufficient to provide for a slight rainfall. House-drains, on the other hand, may have to carry off a considerable amount of rain-water. The sewers need not be enlarged, on this account. The proposed system crosses and re-crosses natural water-courses, at frequent intervals. At these points, overflows should be constructed, by which the contents of the sewer can escape. Then the sewer will carry as much as it can; and in heavy storms, the excess will escape by the storm-overflow, to the nearest water-course, will be flowing, by that time, a roaring torrent and fast rule can be laid down, as to the amount of rain-water which may be admitted to house-drains. It should, however, be excluded, as far as possible; and carried off by surface channels, to the storm-water system.

21. As a rule, the rain-water from courts and yards only, should be admitted; places on which foul matter may accumulate. The advantage of this arrangement, as regards the householder, is great, for it facilitates the maintenance of the house-drains. It obviates any necessity for house-drains of the prodigious diameters, which are but too common in Hongkong, and which can only be kept clear of deposit by a lavish use of water. The common argument in favour of these huge drains is "make them big enough and they will not choke up;" thus assuming the existence of deposits as a necessary incident in the working of a drain. Now if a drain is well laid and provided with proper traps, any solid object that can pass through the trap, will be carried away by a reasonable flush. Of course an object large enough to obstruct a small pipe will not choke a large one, but will remain in it, and form a nucleus of deposit. What happens in drains of moderate size is that deposits go on accumulating, perhaps for many years. The drain becomes a cess-pool. Ultimately, it either overflows altogether, and the sewage escapes by leaky joints; or the deposit goes on accumulating, until the sectional area is diminished to that proper for the flow, and passage is maintained by it, permanently, or till some casual obstruction takes place.

22. A case once came under my notice, where the architect most certainly provided a house-drain of ample size to prevent it from becoming choked. It was six feet high, and four feet wide. It did not choke for upwards of a century, and might have gone on for another hundred years, but that it drained; and a consequent inundation of the drains. It was found that this ample channel was full of black deposit, up to the crown of the arch. Along this however there was a narrow water-way, equivalent in section to a six-inch pipe, the size of pipe ultimately used to drain this large mansion (Spencer House).

23. Having thus described the principles, which should be observed in the design of a system of sewerage, not only for the High-level District but generally, I will now proceed to the examination of the plans, prepared by Mr. Cooper, for the sewerage of the district. I find that the design is in strict accordance with the principles laid down, in the previous paragraphs of this report, which were fixed before the examination of the plans was undertaken.

24. A main-sewer runs from along the northern or lower boundary of the Caine Road, Bonham Road, and conducts the sewage to an out-fall at Slaughter-House point. This position of the out-fall is the natural one, assuming that this district is to be kept separate, from those below it. It is the point to which the formation of the ground, conducts the effluent of the district.

25. Wherever the Praya, which is now the case foundation in the design of the sewerage proper, Kennedy Town to Peddar's Wharf, and extends even more, where the Praya Reclamation is complete, there is no important reason which gives the preference to any one point, as an out-fall, over any other, provided always that the sewage is conducted out to a point well below low water-mark; and into a strong run of tide. Salient points are preferable to re-entering angles, on this account. It will be well to limit the number of out-falls, simply to reduce the cost of construction; and to concentrate the sewage, through them, so as to produce a break current, thus preventing a deposit, either in the out-fall, or at the mouth. Fresh sewage is very rapidly assimilated by fish and crustaceans, and is well delivered into from 10 to 30 feet of water, it will be so diluted as to produce no nuisance, certainly nothing comparable to that inevitably caused by the mass of craft which frequent the Praya. The proposed out-fall, therefore, is free from objection.

26. The sizes of the sewer-pipes, as proposed by Mr. Cooper, are certainly ample; and will suffice to convey, not only the sewage-proper, but a considerable amount of rain-water also. Indeed I think it probable that it may prove too large to require the diameter, in some instances at least. But on this point I cannot give an opinion until I have made the necessary calculations; a somewhat lengthy operation, which would have unduly delayed the submission of this report, had I waited for their completion.

27. No hard-and-fast rule can be laid down as to the position of ventilating openings; each case should be decided on its merits. They should be as far from dwellings as practicable. The middle of the road should be avoided, and above all, they should be as inconspicuous as possible.

28. Mr. Cooper estimates the probable cost of the works for this district at \$19,000. I am of opinion that this sum will amply suffice to cover the cost of the necessary works. For reasons already given in a previous report, I think it desirable that the two nullahs which bound Inland lots Nos. 941 and 945 should be regulated in the manner described in the said report. The cost of the work may be estimated at \$6,000, making a total of \$25,000.

29. Unless the Surveyor General requires the larger part of the sum of \$50,000 already voted on account of the W. V. Canal, drainage, and sewerage, the works may be commenced under authority of this vote, as soon as the necessary specifications and working-drawings can be prepared. I recommend, therefore, that authority be given to commence the work as soon as possible. I think it most important that some

part of the Drainage Works should be in hand, before I leave the Colony. If an opportunity be thus afforded me of seeing work in progress, I shall be much better able to advise and direct future operations, as Consulting Engineer, from home, than if I merely left a set of plans and specifications with the Resident Engineer.

30. I propose shortly to report to you on the drainage of a second section of the city, between the High-level District treated in this report, and the sea, and bounded eastward by the City Hall. Lastly, I propose to report on the drainage of the flat portion, to the eastward of the City Hall.

APPENDIX I.
Note on the evolution of gas by sewage.

Experiments made by the late Dr. Letheby on the generation of sewer-gas from sewage, show that a gallon of sewage containing 182.8 grains of organic matter, when excluded from the air, gave, in "nine weeks 12 cubic inches of gas per hour, consisting of .75833 of marsh gas 15.999 10.187 of nitrogen, and .00887 of sulphuretted hydrogen." It is to be noted that this is the result of a laboratory experiment, and after decomposition, has purposely been allowed to take place.

(Baldwin Latham, Sanitary Engineering, page 325.)

The sewerage of Hongkong will probably amount to about 3,000,000 gallons a day. If this were collected in a tank and kept till it was in a putrid condition, it would evolve, according to Dr. Letheby's experiment, 50,000 cubic feet of gas per day or sufficient to fill a room 37 by 37 by 37.

The sewage will flow so rapidly through the sewer, that each gallon of sewage will be in the sea within a few minutes of its leaving the house, say in twenty minutes as an extreme limit. Supposing that the people of Hongkong are so negligent of their house-drains, that all the sewage enters the public sewer in a state of active putrefaction; then each gallon will evolve, *in transitu*, about .04 cubic inch of gas, or in all 700 cubic feet of gas per day, or sufficient to fill a 12" pipe, for a length of about 90 feet.

It is to be hoped that the house-drains will not be neglected, but even if it were, the amount of real gas to be evolved from the sewerage in the public sewers would be trivial.

APPENDIX II.
Movement of Air in Sewers.

Santo Crimp on the movement of sewer-air at Wimbledon.

Proceedings Ins. C.E. Vol. XCII. Part III. Page 383 et seq.

SEWER-AIR EXPERIMENTS AT WIMBLEDON.

Month	Temperature of Air.	Temperature of Sewer.	Difference.	Temperature of Sewer.	No. of Days.	Up.	Down.	Both.
January	35.43	45.70	+6.71	46.30	13	18	8	
February	34.75	44.10	+7.55	44.75	10	19	10	
March	34.40	44.10	+7.55	44.75	10	19	10	
April	35.43	45.70	+6.71	46.30	13	18	8	
May	35.43	45.70	+6.71	46.30	13	18	8	
June	35.43	45.70	+6.71	46.30	13	18	8	
July	35.43	45.70	+6.71	46.30	13	18	8	
August	35.43	45.70	+6.71	46.30	13	18	8	
September	35.43	45.70	+6.71	46.30	13	18	8	
October	35.43	45.70	+6.71	46.30	13	18	8	
November	35.43	45.70	+6.71	46.30	13	18	8	
December	35.43	45.70	+6.71	46.30	13	18	8	
Mean	35.43	45.70	+6.71	46.30	13	18	8	
Total	425.56	549.20	+82.64	549.20	130	234	80	

The sewer experimented upon was 1,800 feet long; and had an average gradient of about 1 in 19, so that it was nearly as steep as the sewers of Hongkong.

"During the entire series of experiments the actual volume of air recorded as passing down hill exceeded that recorded as passing up-hill by nearly one-third." Whilst down-hill currents were recorded as on 273 days as against up-hill currents on 97 days. "The direction of the current was determined by that of the wind; whilst the currents were either strong or weak or imperceptible, according as the wind was fresh or light, or calms prevailed."

"In gusty weather the currents were at one moment rapidly up-hill, and then suddenly the direction would be reversed, this occurring again and again in the space of a few minutes."

"In a large brick sewer the currents were found to be in opposite directions, at one and the same time, at two points not more than 200 yards distant from each other."

"These exhaustive experiments clearly showed that there is no permanent upward current. They agree exactly with what was found to take place in the Peak Drainage."

4. Compared with 1888, there has been an increase of British tonnage amounting 26,520 tons; and a decrease of foreign tonnage of 51,213 tons. There has also been a decrease in the junk trade of 289,018 tons.

5. Compared with the average of the past 3 years, there is a decrease under the British flag of 4.6 ships and 167,033 tons. Of foreign ships, there is an increase of 53,510 tons.

6. The general trade as represented by the amount of shipping from and to the various countries does not show on the whole any marked alteration. Coochin-China, Siam, and the Gulf of Tonquin show a falling off while the Coast of China and Formosa (in British ships) and India and Singapore show the chief increase. There is however a considerable falling off in the junk trade between Hongkong and Coast of China and Formosa.

7. The trade with Great Britain and Continent of Europe does not differ materially from that of 1889.

8. 1660 steamers, 151 sailing vessels, and 26,957 junks arrived during the year, giving an average of over 84 vessels daily arriving in the waters of the Colony. Of the steamers, over 60 per cent. were British and of these, more than 50 per cent. were "ocean going."

STEAM-LAUNCHES.
9. On the 31st December, there were 101 steam-launches in the Harbour; of these 50 were licensed for the conveyance of passengers, 41 were privately owned, 10 were the property of the Colonial Government. There were, in addition, 6 launches the property of the War Department.

EMIGRATION.
10. There has been a falling off in the number of Chinese leaving the colony for Ports other than those in China or Japan. One cause of this falling off is said to be a reduction in the rate of wages paid to coolies in the Straits Settlements. I am inclined to the belief, however, that the principal cause is that the Coolie Brokers or "Catchers" who go into the interior to procure emigrants, are not just now as successful as they have been hitherto in securing clients. The fact of fraudulent practices on the part of these "Catchers" has become known in the interior, and the Mandarins have consequently put a check on the practice. The fact of the "Catchers" being known in the hands of the "Coolies" is not an unmixed benefit. On the one hand, the number of coolies who are ejected on migrating is reduced, but on the other hand, those on whom no deception is being practised are distrustful and thus deterred from going.

11. In my Annual Report for 1888 I alluded to the abuses connected with Chinese Emigration. I have since had no cause to alter the opinion which I then expressed. An abuse which I did not then refer to was that of the "impersonation" at the examination before the Emigration Officer. This is sometimes detected at the final examination on board, when the coolie, having plucked up courage, declares that he does not want to go, and it is then discovered that although he has a "contract ticket" which has been passed by the Emigration Officer, he himself has never been subject to examination. It also frequently occurs that coolies are found on board the vessel with tickets similar in all respects to those issued by the Passenger Broker, but which have not received the Emigration Officer's stamp, thus shewing that the holders of these tickets have never been examined as to their willingness to emigrate. Enquiry as to the origin of these tickets is always unsuccessful, the coolie has always received it from "a friend" whom he cannot or will not give up.

12. During 1889, direct emigration to Dell (or Medan) in Sumatra was introduced; previous to this, it used to be done through Singapore. The first ship that left here direct was the *China* with 272 emigrants. When somewhere near Singapore, there was a revolt of the coolies and the captain was forced to take the vessel into Singapore. The reason given for the out-break was that the coolies were told at Hongkong that they were going to Singapore, and they did not want to go anywhere else.

13. Whatever safeguards are adopted for the protection of the emigrants, it is Chinese coolies, it will think always be possible for them to be to some extent circumvented by the wily and unscrupulous Chinese Brokers. I think, however, that if the proposed system of Licensed Boarding Houses and an Emigration Wharf is established, a severe blow will be dealt to these rascals, and I have hope that when the system is adopted, we shall hear little about real Emigration abuses.

REGISTRY OF SHIPPING.
14. During the year, six vessels of 1,694 tons were registered under the provisions of the *Merchant Shipping Act, 1854*, and seven Certificates of Registry were cancelled. Return No. XVIII shows the remainder of the work done in this Branch.

MARINE MAGISTRATE'S COURT.
15. Fifty-three cases were heard in this Court during the year. Refusal of duty (17), Assault (11), were the principal cases. The cases of ships, and Throwing Ballast into the Harbour (9), and Leaving without Clearance (6) in the case of junks.

EXAMINATIONS FOR THE POST OF MASTERS, MATE, AND ENGINEERS UNDER SECTION 15 OF ORDINANCE NO. 8 OF 1879.
16. The following table will shew the number of candidates examined for certificates of competency, distinguishing those who were successful, and those who failed:—

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EXAMINATIONS FOR THE POSTS OF
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15 OF ORDINANCE NO 8 OF 18
16. The following table will shew t
ber of candidates examined for certifi
competency, distinguishing those who
cessful, and those who failed :—

4. On the 15th August, 1889. Inquiry as to the loss of the British steamship *Albatross*, Official No. 84,363, on a reef off Panama, on the morning of the 14th July, 1889. The Master's (William Buyers) Certificate of Competency was returned to him.
5. On the 9th September, 1889. Inquiry respecting certain charges of misconduct brought against Alexander Cox, first mate of the British barque *Manna-Loa*, Official No. 72,640 of Maitland, Nova Scotia, by Lewis Ellis, able seaman of the said ship. The First Mate's Certificate of Competency was suspended for two years.
6. On the 16th September, 1889. Inquiry respecting certain charges of misconduct brought against Clement Young, first mate of the British barque *Omega*, Official No. 63,881 of Shanghai, by Arthur Vere Brown, master of the said ship. The First Mate's Certificate of Competency was returned to him.
7. On the 12th November, 1889. Inquiry as to the loss of the British barque *Hattie E. Taylor*, Official No. 83,663 of Sydney, N.S.W., on the N.E. extreme of Chek Wan in the Samouir Group, on the night of the 1st November, 1889. The Master's (Robert S. Malcolm) Certificate of Competency was returned to him.
8. On the 14th December, 1889. Inquiry as to the loss of the British ship *Nylghau*, Official No. 80,617 of Yarmouth, Nova Scotia, on the Pratas Shoal, on the evening of the 25th November, 1889. The Master's (Watson Baker Butler) Certificate of Competency was returned to him.

SEAMEN.
18. 9,322 seamen were shipped and 10,069 were discharged at the Shipping Office and on board ships during the year.

19. 238 distressed seamen were received during the year. Of these, 44 were sent to United Kingdom, 21 were sent elsewhere, and 173 obtained employment. \$4,390.40 were expended by the Board of Trade in the relief of these men and \$233.13 by this colony.

MARINE SURVEYOR'S DEPARTMENT.
20. Return No. XXIII. shows a continued increase in the work of this Department. 1,127 visits were made by the Government Marine Surveyor to vessels under survey.

LIGHT-HOUSES.

21. The three Light-house Stations have been maintained as usual during the year. In May, an alteration was made in the nature of the Green Island light, the red shades were dispensed with, and a bright light is now exhibited all round except over the Kellet's Bank. A light vessel has also been kept up on Kellet's bank to mark the spot where eight junks laden with stones have been sunk as an experiment with the object of finding out the obstruction thus caused by the "sitting up" on the Bank. I do not anticipate much result from the experiment.

22. Some little difficulty has been experienced with the Chinese staff of the Light-house. After being trained to their work of watch-keeping in the lantern, they frequently find the duty too irksome and laborious and leave, with or without permission, as most convenient to themselves. A new man has then to be obtained and his training taken in hand, and with a temperature in the lantern of 83 degs, as it often is in the summer nights, the duty of training these men, which falls on the European light-keeper, is a very trying one, seeing that he has his own watch to keep besides. Notwithstanding this, the lights have been efficiently maintained. I propose, however, recommending that a better class of Chinese shall in future be obtained for the post of light-keepers; these to receive higher rates of wages than at present, and to give security for the proper performance of their duty, and entering into an agreement to serve for a certain length of time.

BOKHARA ROCKS.
23. During the past year experiments have been made by the Royal Engineers with the object of determining the practicability or otherwise of blasting a portion of the Bokhara Rocks, so as to obtain a minimum depth over the Rocks of 5 fathoms. These experiments have shown that without special appliances the operation cannot be successfully carried out. The matter is, however, still receiving attention.

GOVERNMENT GUNPOWDER DEPOT.
24. During the year there has been stored in the Government Magazine at Stone Cutters' Island.

	No. of Cases.	Approximate Weight, lbs.
Gunpowder, Privately owned.....	18,200	440,320
Government owned.....	538	63,300
Cartridges, Privately owned.....	1,000	100,000
Government owned.....	118	11,800
Explosive Compounds, Privately owned.....	1,830	90,941
Government owned.....	9	750
Total.....	21,305	727,221

On the 31st December, 1889, there remained as under—

	No. of Cases.	Approximate Weight, lbs.
Gunpowder, Privately owned.....	4,600	110,400
Government owned.....	538	63,300
Cartridges, Privately owned.....	1,000	100,000
Government owned.....	118	11,800
Explosive Compounds, Privately owned.....	1,830	90,941
Government owned.....	9	750
Total.....	8,105	277,191

25. The condition of the Magazine is not such as might be desired. For several years, white-ants have been at work in the rafters of the roof, and although their depredations have from time to time been restored the pests themselves have not been got rid of. The eastern outer wall is cracked owing apparently to the subsidence of the foundation. The wharf also is in a state bordering on the "unsafe."

The subject also of excluding the public from the precincts of the Magazine is one which, I submit, should receive consideration. At present, this is the only portion of Stone Cutters' Island where the public can land without special "permit" and when it is considered with what care such like premises are generally guarded, the omission in this case seems to call for remark.

IMPORTS AND EXPORTS (OPIMUM) OFFICE.
26. The return shows that during the year the amount of opium reported was as follows:—
Imported.....67,429 21-40th chests.
Exported.....61,803 27-40th
Through cargo reported but not landed.....12,306 chests.

19 317 Permits were issued and a daily memo of export was sent to the Kowloon Customs Office.

I have the honour to be,
Your most obedient servant,
R. MURRAY RUMSEY, Ret. Com., R.N.,
Harbour Master, &c.
The Honourable W. M. Deane, Acting Colonial Secretary, &c., &c.

PEKING.

(FROM OUR OWN CORRESPONDENT.)
21st May, 1890.
I had a visit to-day from the head Lama of the Dagoba Temple, called Pa-ta-se, in the

west of Peking. He is a most learned man, and gave me ready answers to questions put to him regarding Peking in the Yuan and Ming dynasties. Regarding the size of the city in the Mongol dynasty he said it was 40 li on each side, making the circumference 160 li instead of 10 on each side, or 40 round, of the present capital. We have the remains of the mud walls of the Mongol capital on the north and east, a few li outside the present walls. The west wall is a little outside the celebrated Taotai temple, Poyunkwan. The position of the gate is here indicated by a mound of earth, and the locality is called Hwei-chao Gate.

To the south, the Mongol wall was south of the present Yung-ting Gate, the southern gate of the southern city. When the third Ming Emperor determined to move his capital to the north, he consulted a celebrated geomancer Liu Po-wai, who said the Mongol city indicated wealth to the dynasty, but poverty to the people, *kuo fu, min ch'uan*; and the Nan-hai-lai or Southern Hunting Ground, *min fu, kuo ch'uan*, wealth to the people but poverty to the dynasty. The present site would mean equal happiness to both (*ching fu*), and hence the present city was built. The well-known Yellow Temple or Hwang-se on the plain north of the city formed part of the Forbidden City of the Mongol dynasty. The present temple was the Palace. The walls, moat, and other buildings have been removed and the whole levelled. At that time Peking was called Ta tu, "the great city," and the summer residence outside the wall, some 200 li from Kaigan, was called Shang-tu "the upper city." The Emperors used to repair their summer palace from the 4th to the 10th of the 10th month, immediately to the north of the present palace, with its beautiful five pavilions on the ridge of it, was formed in the Ming dynasty by the heaping up of coals against a siege, and inside the front gate, in the street called T'ai-pai, all under the flag-stone is charcoal. The Hata gate, our most eastern gate in the south wall of the northern city, was so called from the residence in its neighbourhood, in the Ming dynasty, of a Mohammedan Prince called Ha-ta-la-wang; hence the gate was so designated. A rather illiterate correspondent of mine was therefore not so far wrong when he once addressed a letter to me Ottoman St. We read frequently in the *Peking Gazette* of the Pei-hai and Nan-hai, or northern and southern seas, terms applied to portions of the lake north and south of the Marble Bridge. The Empress Dowager, it is known, now lives on the shores of the southern sea, and a little bit of railway skirts its edge, part of the way. The old Pei-tang Cathedral and the Tz'kwang-k'o, where the Foreign Ministers were received by the Emperor Tung-chi in audience, are situated on the western edge of the lake, near the middle but south of the dividing line—the beautiful bridge which spans the lake here—its narrowest part. The lake in summer is filled with lotus. Since the Emperors moved to the bank all the old pavilions across the bridge has been stopped and the whole is enclosed. The names of these two seas have been given them by the ignorant eunuchs and women of the palace. The names occur in none of the four or five topographical histories of Peking. In the time of Kanghi and Chienlung, they were called by their old names. Even the *Peking Gazette* commits the error of using these incorrect expressions. In the Yuan dynasty the northern one was called the Ye Chih and the southern one Hsi Yuan. In the Han dynasty we read of the Ching-lo-pan, and at the present day, behind the beautiful dogas which stand on the hill on the east of the northern portion of the lake, is a brass man bearing up a basin to catch the dew. The well-known temple Hu-kwo-sz in the west of the city, where fairs are held on the 7th, 8th, 17th, 18th, 27th and 29th of each month, was in the Yuan dynasty the place of the To-to-cheng-huang. The Pei-ta-tz temple with the white pagoda, of which our lama is the chief, dates from the Liao dynasty which preceded the Mongol one. The Ching-hwa-tao or small dogas on the east edge of the lake dates from the Yuan dynasty.

The Italian Minister has arrived. The present quarters of the Royal Italian Legation are in the premises of the Russian Postmaster, whose houses are immediately in front of the residence of the late Marquis Tsing. The Minister has gone to Tientsin to escort his family to the capital. The French Minister and Madame Lemaire purpose leaving very soon. This summer Col. Denby and Mr. Cheshe are starting for a tour of the ports. Mrs. Denby is expected at Shanghai shortly on her return from the United States. The British Admiral and party are at present guests of the British Legation. General Sir Allen Johnston is also here on a visit. Sir Robert Hart's delightful Wednesday afternoon garden parties are in full swing. Lady Walsingham's equally pleasant Monday afternoon tennis parties are largely patronised. The weather has now begun to be warm and the trees are taking on their foliage. The second musical concert of Prof. Terschak and Madame Schuller, which it was intended should take place, has been finally abandoned. About sixty of the residents attended the first. Our foreign population is very limited. The two days' Spring races here passed off as usual. The second day was somewhat windy and dusty. None of the Foreign Office Ministers put in an appearance. The races were postponed for some days owing to the demise of the Marquis Tsing. For this reason, probably, the Ministers did not visit the course. The Emperor and Empress Dowager will pay a visit to Wanshouan on the 10th and will live at it for the following ten days, returning each evening to the Palace in the city. The Emperor also proceeded on the 14th to the Temple of Heaven and returned on the 20th. Prince Lobanow and family have left Peking for Japan. The Prince assumes the post of Russian Consul at Yokohama. Monsieur Constant has left for Seoul, and Mr. Denby, junr., has gone on a visit to Tientsin. Mr. Heidemann, who was to a visit to Peking his returned to Tientsin. Admiral Sir N. Salmon and his party paid a visit to the Great Wall, Lady Walsingham had an evening "at home" to receive all Peking in honour of her guests. The family of the late Marquis Tsing are busy packing and forwarding to the south their goods. The family will start on the 4th of the 4th month with the remains for Shanghai where they propose to pass the summer, after which they will settle at their ancestral home in Hunan. On the 12th and 13th of the 4th month the friends of the late Marquis will repair to his residence for the final obsequies. The last meeting, for the season, of the Oriental Society was held at the German Legation on May 16th when Dr. Dudgeon read a paper entitled "A Chinese Anatomist" and Monsieur Chavannes read one entitled "Introduction à la Traduction du chapitre de Se Ma Tsien sur les Sacrifices Fong et Chan." The annual election of office bearers of the Society for the next year has taken place. H. E. the Belgian Minister was re-elected President, and Drs. Dudgeon and Bu-hell, Mr. Jordan, and Mr. Visiere were elected members of Council. Mr. Russell was elected Treasurer, and Mr. Denby, junr., Secretary. The President in making leave for the year, thanked the readers of papers, our hosts, and all who had come to hear the papers read. Dr. Martin made an effective speech in criticising Mr. Chavannes' paper. The President referred in suitable terms to the temporary loss the society would suffer by the departure of Dr. Martin.

The weather on the 17th and 18th was unusually hot for the season. A dust storm of unusual severity sprang up on the latter day, which was followed on the succeeding one by

thunder and rain. The wheat crop looks rain badly. Another electric light has been ordered, this time for Wanshouan, also through Mr. Kierulff, one of our stockholders. We are sorry to report that a grave accident occurred to the Spanish *Chargé d'Affaires* on his way up the river. He had gone to Tientsin to escort the Spanish Consul-General and his wife who are now here on a visit. Mr. Uribarri, it is said, fell between two boats and has ruptured some internal organ. We hope to hear soon of his speedy recovery. Madame Verhaeghe has been seriously indisposed for several months, and we do not yet hear of much improvement having been made. M. Goebel, the Belgian Consul-General at Shanghai, and Madame Goebel are at present on a visit and are guests of the Minister. Mr. and Mrs. Rhein are also here on a visit, and are put up at the Belgian Legation. We observed these guests present at the meeting of the Oriental Society. Lady Walsingham has issued her invitations to all Peking for the Queen's Birthday, to be celebrated on Friday the 23rd. It is rumoured that the Italian Minister will spend the summer at Casfo. The Prince di Aeriali, the Secretary of Legation, has been appointed to be *Chargé d'Affaires* in Japan.—*N. C. Daily News.*

Today's Advertisements.

THE EAST BORNEO PLANTING COMPANY, LIMITED.

Issue of \$30,000 twelve per cent. Debentures of \$100 each to be paid off on 30th June, 1892, but redeemable on and after 30th June, 1891, at the option of the Company on six months notice.

THE Directors of the above Company are prepared to receive applications for \$50,000 twelve per cent. debentures terminable on the 30th June, 1892, but redeemable at the option of the Company at any time after the 30th June, 1891, on giving six months' notice. The debentures will be issued on the 1st July next in sums of \$100 each and the interest at twelve per cent. will be payable half yearly on the 10th of June, and the 31st of December. The first interest will be payable on the 31st of December next.

As security for the due payment of both principal money and interest, the Company charges all its property except last year's crop. Forms of Application may be obtained from the Undersigned and should be filled up, and sent to the Company's Bankers, the Hongkong and Shanghai Banking Corporation, on or before the 28th June, 1890, accompanied by a deposit of ten per cent., upon the amount of the debentures applied for. The Form of Debenture can be seen at the Office of the Company.

By Order of the Board of Directors,
CHAS. F. WATSON,
Secretary.

Hongkong, 4th June, 1890. 1852

TO LET.

HOUSES Nos. 1 and 3, Cameroun Villas, Peik. Gas laid on.
One Spacious Five Roomed HOUSE at Mount Kellett, Peik. Gas laid on.
HOUSES Nos. 5 and 6, Des Voeux Villas, Mount Kellett, Peik. Gas laid on.
HOUSES Nos. 2, 17, 20, 22 and 23, Bellios Terrace, Robinson Road.
THE BUNGALOW, Delmar, on Kowloon Farm Lot 1, Yow-ma-ti, with large Garden and Tennis Ground.

Apply to BELLIOS & Co. 1853

STEAM TO SHANGHAI.

THE P. & O. S. N. Co.'s Steamship

"CLYDE,"

will leave for the above place about 24 hours after her arrival with the outward English Mail.

E. L. WOODIN, Superintendent.

Hongkong, 4th June, 1890. 1854

FOR MELBOURNE AND SYDNEY.

(Taking through Cargo to ADELAIDE, NEW ZEALAND, and QUEENSLAND PORTS.)

THE Steamship

"BUCEPHALUS,"

Captain Forrester, will be despatched for the above ports, via SINGAPORE and JAVA, on THURSDAY, the 14th inst.

For Freight or Passage, apply to GEO. R. STEVENS & Co., Agents.

Hongkong, 4th June, 1890. 1854

For Sale.

JUST ARRIVED, FOR SALE.

THE New Stem Winder and Enamelled Dish.

WATERBURY WATCH.

SERIES J.—For Gentlemen's, or large size. SERIES L.—For Ladies', or small size.

Winds in less than a dozen turns; Jewelled, Dust-proof, Keyless, with all the latest improvements. A perfect and unrivalled timekeeper; reliable, durable and accurate, and also

"SERIES E.—The 'Good old favorite.' The best form of the original Waterbury; offered at the reduced price of \$4.70 each.

Orders from Out-ports to be accompanied with remittance for cost.

THE MITSUI BUSSAN KAISHA, Sole Agents in Japan, China, Corea, Hongkong & Macao.

No. 10, QUEEN'S ROAD CENTRAL. Hongkong, 30th February 1890. 1852

FOR SALE.

AT THE PEAK.

"THE FALLS" on R. B. L. No. 28.—A well built six roomed House, at present let on lease for one year.

For full particulars, apply to THE HONGKONG LAND INVESTMENT & AGENCY CO., LTD.

Hongkong, 12th November, 1889. 185

FOR SALE.

THE Schooner "MONTIARA,"

Length.....75 feet. Beam.....18 " Depth of hold.....7 1/2 " Registered tonnage.....75 tons. (Owing to recent alterations the carrying capacity of the Montisara has been increased to about 120 tons dead weight.)

The Montisara was built in Singapore, and is most solidly constructed of oak throughout, with iron-wood frames. She has recently been thoroughly overhauled under experienced European superintendence, fastened throughout with 7 inch galvanised spikes, and newly re-coppered. She is braced rigged with the best canvas sails. Draft of water 7 feet.

For further particulars apply to R. FRASER-SMITH, 6, Pedder's Hill.

Hongkong, 9th April, 1890. 1879

Intimations.

W. POWELL & CO.

GENTLEMEN'S OUTFITTING DEPARTMENT.

Gent's Gauze Vests and Drawers.
" Bathing Vests and Drawers.
" Spun Silk Vests and Drawers.
" Silk Vests and Drawers.
" Natural Wool Vests and Drawers.
" Summer Cashmere Vests and Drawers.
" Sanitary Wool Hosiery.
" Lisle Thread Socks.
" Cotton Socks.
" Wool and Cashmere Socks.

Gent's Silk and Spun Silk Socks.
" Bathing Socks and Bathing Costumes.
" Bath Blankets and Towels.
" New Shades in Collars.
" Shirt Fronts with Collars attached.
" New Silk, Cotton and Washing Scarfs & Ties.
" Boots and Shoes.
" Felt, Straw and Pith Hats.
" Cotton and Wool Pyjamas.
" Shirts, Dressing Gowns, &c., &c.

CHS. J. GAUPP & CO., CHRONOMETER, WATCH, AND CLOCK-MAKERS, JEWELLERS, SILVER-SMITHS, AND OPTICIANS.

CHARTS AND BOOKS. NAUTICAL INSTRUMENTS.

Sole Agents for Louis Audemars' Watches; awarded the highest Prize at every Exhibition; and for Volkmann and Sohn's CELEBRATED OPERA GLASSES.

MARINE GLASSES AND SPYGLASSES, No. 2, Queen's Road Central. 1843

THE SONGEI KOYAH PLANTING COMPANY, LIMITED.

NOTICE TO SHAREHOLDERS.

IT is hereby notified that a CALL of FIVE DOLLARS (\$5) per Share is payable to the Hongkong and Shanghai Banking Corporation on or before the 7th day of June next.

GIBB, LIVINGSTON & Co., General Managers.

Hongkong, 31st May, 1890. 1838

NOTICE.

HONGKONG & WHAMPOA DOCK COMPANY, LIMITED.

SHIPMASTERS AND ENGINEERS

are respectfully informed that, if upon their arrival in this HARBOUR none of the COMPANY'S FOREMEN should be at hand, ORDERS FOR REPAIRS, if sent to the HEAD OFFICE, No. 14, Praya Central, will receive prompt attention.

In the event of complaints being found necessary, communication with the Undersigned is requested, when immediate steps will be taken to rectify the cause of dissatisfaction.

D. GILLIES, Secretary.

Hongkong, 25th August, 1885. 185

Dr. Knorr's ANTIPYRINE.

(Dose for Adults 15 to 35 grains troy)

IS the most approved and most efficacious remedy in cases of HEADACHE, MIGRAINE, NEURALGIA, RHEUMATISM, FEVER, TYPHUS, ERYSIPELAS, HOOPING-COUGH, and many other complaints. It is also the very best Antiseptic. Highly recommended by the medical Faculty. To be had at every reputed Chemist and Druggist. Ask for Dr. KNORR'S ANTIPYRINE! Each Tin bears the inventor's signature "Dr. KNORR" in red letters.

Supplies constantly on hand at the China Export, Import, and Bank Co.—Sole Agents for China. Beware of spurious imitations!

Hongkong 20th May, 1889. 1844

CARBOLINEUM AVENARIUS, (REGISTERED).

AN ANTISEPTIC PAINT for the Preservation of Wood, Walls, Ropes and Ship's Tackle. May be applied to Beams, Floors, Wainscoting, Wooden Ornaments, Eaves, Roofs, Wooden Sheds, Farmer's and Gardener's Implements, Carts, Posts, Fences, Stables, Gates, Bridges, Boats, and all Timber underground. Effectually excludes all dampness from walls painted with it and entirely prevents the crumbling away and decay of both stone and bricks. While sets do not touch wood painted with Carbolineum Avenarius.

Used during the last 14 years with the utmost success, as proved by numerous Testimonials of living authorities.

Sold in casks of about 450 lbs. net. Price 8 cents per lb.

For further particulars, apply to SCHEELE & Co., Sole Agents, No. 16, Stanley Street.

Hongkong, 22nd December, 1889. 1836

HONGKONG HIGH LEVEL TRAMWAYS COMPANY, LTD.

SUMMER TIME TABLE.

To table effect from 1st May.

The CARS RUN between St. John's Place and Victoria Gap as follows—

WEEK DAYS.

8 to 10 A.M. every quarter of an hour.

10 to 12 P.M. every quarter of an hour.

1 to 2 P.M. every half hour.

4 to 8 P.M. every quarter of an hour.

THURSDAYS.

NIGHT TRAM at 10.30 and 11 P.M.

SUNDAYS.

CHURCH TRAM at 10.40 A.M.

12 (NOON) to 2 P.M. every quarter of an hour.

4 to 8 P.M. every quarter of an hour.

9, 10, 10.30 and 11 P.M.

Special Cars may be obtained on application to the Superintendent.

Single Tickets are sold in the Cars; Five-Cent Coupons and Reduced Tickets at the Office.

MACEWEN, FRICKEL & Co., General Managers.

Hongkong, 30th April, 1890. 1689

A. G. GORDON & CO., LIMITED.

ENGINEERS, LAUNCH BUILDERS, GENERAL AND GOVERNMENT CONTRACTORS, IRONMONGERS, COMMISSION AGENTS, VALUATORS, IRON and TIMBER MERCHANTS.

WORKS BOWENSTON, EAST POINT.

OFFICE 9, PRAYA CENTRAL.

STEAM LAUNCH COMPANY, LIMITED.

Hongkong, 1st May, 1889. 184

INTIMATION.

J. Blackhead & Co.,

SHIP-CHANDLERS, SAIL-MAKERS,

PROVISION MERCHANTS, NAVY CONTRACTORS,

GENERAL COMMISSION AGENTS.

No. 11, PRAYA CENTRAL, (Opposite Pedder's Wharf).

SOLE AGENTS FOR RAHTJEN'S GENUINE COMPOSITION

FOR THE BOTTOMS OF IRON SHIPS.

HARTMANN'S GREY PAINT, specially manufactured for coating the inside of STEEL SHIPS.

CARBOLINEUM AVENARIUS PRESERVATIVE AGAINST ROTTING, DECAY, &c., of WOOD.

ENGLISH MORGAN'S SON'S SAPOLIO

OR GENERAL CLEANING PURPOSES.

CHR. MOTZ & Co., BORDEAUX CLARETS.

MAX HAASEN'S FRANKFURT ON M. CONSERVED MEATS, VEGETABLES AND FRUIT

CEMENT from the celebrated Factory of Hemmoor.

SWEDISH TAR and OREGON PINE LUMBER.

FLENSBURG STOCKBEER, ENGINEERS' and BLACKSMITHS' MACHINERY, and TOOLS.

EVERY KIND OF SHIP'S STORES AND REQUISITES ALWAYS IN STOCK